cM **WHAT IS CLAIMED IS:**

1.   A multi-hop data communication network having RF capability comprising:

a plurality of terminal nodes; and

a plurality of bridging nodes which dynamically create and revise communication pathways between any two nodes in the network, each of the bridging nodes independently storing and maintaining local information that specifies how communication traffic should flow through that bridging node, and the plurality of bridging nodes, together, providing a complete specification for the communication pathways in the multi-hop communication network; and

said nodes using HELLO messages with a backward learning technique independently create and maintain locally stored information to specify how communication traffic should flow through that bridging node.

2.   The multi-hop data communication system of claim 1 further comprising means for offsetting the time period between HELLO message broadcasts.

3.   The multi-hop data communication system of claim 2 further comprising means for calculating the time period between HELLO message broadcasts to be received.

4.   The multi-hop data communication system of claim 3 wherein said means for offsetting further comprising a first pseudo-random number generator for generating an offset.

5.   The multi-hop data communication system of claim 4 wherein said means for calculating further

comprising a second pseudo-random number generator used for computing the offset.

6. The multi-hop data communication system of claim 5 further comprising means for passing a seed value between said means for offsetting and said means for calculating so as to synchronize said first and second pseudo-random number generators.

7. A multi-hop data communication system having RF capability comprising:
a plurality of terminal nodes;
a plurality of bridging nodes; and
said bridging nodes further comprising, means for maintaining communication pathways between any two nodes in the network by repeatedly broadcasting messages identifying itself, means for determining the timing between the identifying message broadcasts.

8. The multi-hop data communication system of claim 7 wherein said terminal nodes further comprising means for calculating the time period between HELLO message broadcasts to be received.

9. The multi-hop data communication system of claim 8 wherein the means for determining the timing and the means for calculating the time both further comprise pseudo-random number generator using a common seed value.

10. The multi-hop data communication system of claim 9 further comprising means for passing a seed value between said means for determining the timing and the means for calculating the time.

11. In a multi-hop data communication network having a plurality of bridging nodes and RF communication capability, a plurality of terminal nodes comprising:

5   a RF transceiver;

means for segmenting digitally encoded data to be transferred into discrete data packets;

means responsive to said segmenting means for individually transmitting each discrete data packet; and

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means for reconstructing discrete data packets into digitally encoded data.

12. The multi-hop data communication network of claim 11 wherein said terminal nodes further comprise means for digitally encoding voice signals, and means for generating audio signals from digitally encoded voice signals.

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13. The multi-hop data communication network of claim 11 wherein the length of said discrete data packets are chosen based on correlation distance.

14. The multi-hop data communication network of claim 12 wherein the length of said discrete data packets are chosen based on correlation distance.